

THE ADSORPTION OF METALS TO BACTERIA USING DIFFERENT BIOLOGICAL VARIABLES

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We investigated the metal adsorption characteristics of two different species of bacteria. *Shewanella oneidensis* MR-1 was grown on different media and under different environmental conditions and the resulting cell biomass was used to test whether these parameters affect binding to cobalt. *Pseudomonas fluorescens* was grown under nutrient sufficient and nutrient limited conditions to produce cells with different surface area to volume ratios. These bacterial cells were used to test whether this ratio has an affect on the binding of either cobalt or cadmium to biomass. For both bacteria and all conditions tested, there seemed to be no biological parameter that had any affect on the binding of metal. Protein assays were used to test the efficacy of the sample preparation and assay procedures. The amount of protein measured in experimental samples was up to twenty times higher than at the start of the experiment. This result suggests that the cells are not maintaining their integrity throughout the course of the experiment. Fluorescent staining for DNA resulting in the staining of just a fraction of the cells that could be seen using bright field microscopy. This result indicates that the cells used for the experiments were not viable and the binding observed in all experiments was due to abiotic parameters.